

REMARKS

Claims 15-24 and 27-28 have been amended. Claims 1-14 were canceled by prior amendment without prejudice or disclaimer. Accordingly, claims 15-29 remain pending in the application.

35 U.S.C. §102(e)

Claims 15-29 stand rejected under 35 U.S.C. §102(e) as being anticipated by Blumenau et al. (Pat. No. 6988130 - hereafter "Blumenau"). These rejections are traversed as follows.

Discussion of the Invention

Under the invention, a storage system includes a plurality of logical units. The storage system also includes a management logical unit as a command device dedicated for coupling control for controlling coupling between the plurality of logical units. A host computer writes instructions to the command device (i.e., to the management logical unit dedicated for coupling control) as data, and the external storage system processes the data as commands for carrying out coupling operations, such as wherein one logical unit is coupled to another. (See, e.g., paragraph [0002] of the substitute specification, and e.g., LUs 241, 243 of FIG. 1.) The coupling operation enables copying data or the like from one logical to another logical unit. An application in the host controls the issuance of coupling instructions based upon information received from the storage system in response to inquiry

commands from the host to specified logical units. The application rejects a request for a coupling operation directed to logical units other than logical units indicated to be accessible by the host in the information received from the storage system.

Discussion of Blumenau

The Office Action asserts that Blumenau's "gatekeeper" volume is the equivalent of Applicants' command device (management logical unit) (citing, e.g., column 31, lines 16-21 of Blumenau). However, Applicants' command device is a management logical unit dedicated for coupling operations on the other logical units. (See, e.g., the first line of paragraph [0016] of the substitute specification of the present application.) The gatekeeper volume of Blumenau is a predefined logical device that stores configuration information for the volumes accessible to a host. (See, e.g., column 31, lines 3-21 of Blumenau.) This is not the same as Applicants' command device, which does not store configuration information regarding the volumes accessible to a host. Rather, Applicants' command device receives coupling instructions as data. The storage system processes this data as commands for coupling. (See, e.g., paragraph [0002] of the substitute specification.)

Further, at column 33, lines 49-54, Blumenau discusses that the gatekeeper responds to a mount command by allocating free logical storage volumes to specified LUNs. This is entirely different from Applicants' invention in which logical units that already exist are coupled. If there is anything in Applicants' system somewhat analogous to Blumenau's gatekeeper device, it is the application on the

host in the present invention. Under Applicant's invention, the application on the host receives information from the storage system regarding which logical units are accessible by the host in response to inquiries by the host to specific logical units. Then, based on a list created from this gathered information, the application on the host prevents the host from issuing commands for coupling to logical units not accessible by the host. Additionally, it should be noted that the "Report LUNs" command of Blumenau is not the same as Applicants' inquiry from the host to the storage device for determining logical units accessible by the host. The "Report LUNs" command results in each port returning a list of logical volumes which are accessible from that port (see, e.g., column 9, lines 38-45). The "Report LUNs" command is not a "response of an inquiry command from said host to a specified logical unit", as required by claims 15, 19 and 24. Further, the "Report LUNs" command does not result in addition of extended logical unit information to the logical unit numbers, as also required by claims 15, 19 and 24.

In addition, Blumenau provides no teachings regarding coupling of logical units to each other, and no teachings of an application on a host for controlling requests for coupling operations from the host. The Office Action cites the host controller 61-64 as performing this function (citing column 12, lines 35-53). However, from a review of Blumenau, it is apparent that the host controller is nothing more than a host bus adapter (column 12, line 43) and all that is discussed is sending of mount commands from the host controller to the port adapters for mounting and unmounting of volumes that the host is able to access (column 33, lines 29-34). This

is not the same as the present invention in which instructions for coupling operations are sent from the application to a management logical unit, and the storage system then couples the logical units based upon the instructions sent to the management logical unit. After a complete and thorough review, Applicants were unable to find any teachings in Blumenau relating to a management logical unit performing a function similar to Applicants' command device for carrying out coupling operations, or any teachings relating to coupling between logical units.

Further, there is no teaching in Blumenau regarding an application on the host that prevents the host from sending a coupling instruction to a management logical unit on the storage system. The Office Action asserts that Blumenau teaches an application on the host that denies requests for coupling of logical units not assessable by the host, citing Blumenau at column 12, line 66, through column 13, line 13 and column 27, line 32, through column 28, line 57. However, a review of these portions of Blumenau shows that the port adapter in the storage system denies a request for access if the HOST_ID of the host controller port requesting access is not equal to the HOST_ID of the indexed entry in the virtual port host table. (See, e.g., column 27, lines 32-42, of Blumenau.) Further, at column 12, line 66, through column 13, line 13, Blumenau describes that the information for the set of volumes accessible to each host is stored in a volume access table 80 in memory 77 of port adapter 35 (see also FIG. 4 of Blumenau). Thus, in Blumenau it is not an application on a host that prevents access by a host, but instead it is ports on the storage system. Further, it should be noted that this portion of Blumenau is discussing a host

accessing volumes in the storage system, which is entirely different from the present invention which is directed to coupling of logical units to one another.

Additionally, the Office Action further asserts that column 30, lines 3-8 of Blumenau teaches an application on the host for denying coupling requests. However, this portion of Blumenau discusses nothing more than a graphical user interface for use by a system administrator. FIG. 4 of Blumenau clearly illustrates that the system administrator 90 accesses the storage system 20 through a display 91, keyboard 92, and service processor 93. Thus, the graphic user interface is not an application running on a host, as required by the claims of the present application. Also, paragraph [0002] of the present application states that Applicants' invention is an improvement over past techniques that required issuance of coupling commands from a dedicated terminal (i.e., a service processor). Thus, even if the graphic user interface of Blumenau were running on a host, it does not perform the function described in the claims. Namely, it does not reject a request for a coupling operation directed to coupling of logical units other than those on a list gathered in response to inquiry commands sent from a host to specified logical units, as required by the claims.

In summary, as detailed above, Blumenau does not teach anything regarding coupling one logical unit to another logical unit; does not teach a management logical unit in the storage system dedicated for coupling operations; does not teach an application on a host sending inquiry commands to specified logical units to determine logical units accessible by a host; does not teach a response to the inquiry

from the storage system including extended logical unit numbers; and does not teach that the application on the host prevents requests for coupling operations from the host directed to logical units not accessible by the host. Accordingly, Blumenau does not teach or suggest the invention set forth in independent claims 15, 20 and 24.

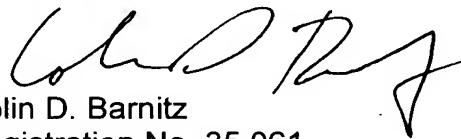
The remaining claims depend from these claims, claim additional aspects of the invention, and are allowable at least because they depend from allowable base claims.

Conclusion

Should the Examiner feel that a telephonic or in-person interview would be useful to advance prosecution of the application, the Examiner is encouraged to contact Applicants' undersigned attorney.

In view of the foregoing amendments and remarks, Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Respectfully submitted,



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